

Unit 6 Lesson 2C → Extension + Application

Quiz

Properties quiz #2 should take no more than 10 minutes.

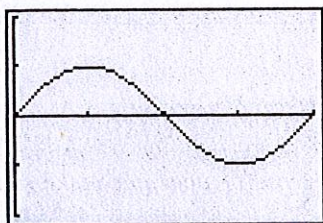
Classwork / Homework

The following problems connect this week's ideas to past concepts. Work in pairs or groups of 3. Anything you do not finish is HW.

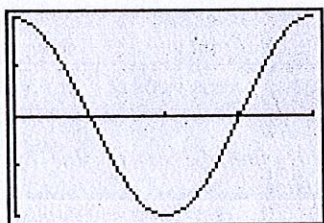
In Exercises 65–68, the graph with the given equation is shown in a $\left[0, 2\pi, \frac{\pi}{2}\right]$ by $[-2, 2, 1]$ viewing rectangle.

- Describe the graph using another equation.
- Verify that the two equations are equivalent.

65. $y = \sin(\pi - x)$



67. $y = \sin\left(x + \frac{\pi}{2}\right) + \sin\left(\frac{\pi}{2} - x\right)$



In Exercises 69–74, rewrite each expression as a simplified expression containing one term.

69. $\cos(\alpha + \beta) \cos \beta + \sin(\alpha + \beta) \sin \beta$

70. $\sin(\alpha - \beta) \cos \beta + \cos(\alpha - \beta) \sin \beta$

71. $\frac{\sin(\alpha + \beta) - \sin(\alpha - \beta)}{\cos(\alpha + \beta) + \cos(\alpha - \beta)}$

72. $\frac{\cos(\alpha - \beta) + \cos(\alpha + \beta)}{-\sin(\alpha - \beta) + \sin(\alpha + \beta)}$

73. $\cos\left(\frac{\pi}{6} + \alpha\right) \cos\left(\frac{\pi}{6} - \alpha\right) - \sin\left(\frac{\pi}{6} + \alpha\right) \sin\left(\frac{\pi}{6} - \alpha\right)$

(Do not use four different identities to solve this exercise.)

98. Verify the identity:

$$\frac{\sin(x - y)}{\cos x \cos y} + \frac{\sin(y - z)}{\cos y \cos z} + \frac{\sin(z - x)}{\cos z \cos x} = 0.$$

In Exercises 99–102, find the exact value of each expression. Do not use a calculator.

99. $\sin\left(\cos^{-1} \frac{1}{2} + \sin^{-1} \frac{3}{5}\right)$

100. $\sin\left[\sin^{-1} \frac{3}{5} - \cos^{-1}\left(-\frac{4}{5}\right)\right]$

In Exercises 103–105, write each trigonometric expression as an algebraic expression (that is, without any trigonometric functions). Assume that x and y are positive and in the domain of the given inverse trigonometric function.

103. $\cos(\sin^{-1} x - \cos^{-1} y)$